

Name: _____

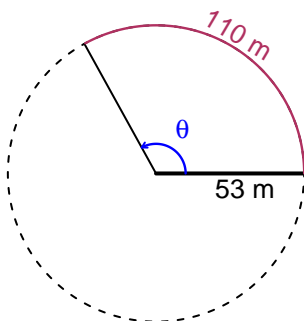
Date: _____

Trig Final (TEST v655)

- You should have a calculator (like [Desmos](#)) and a [unit-circle](#) reference sheet.

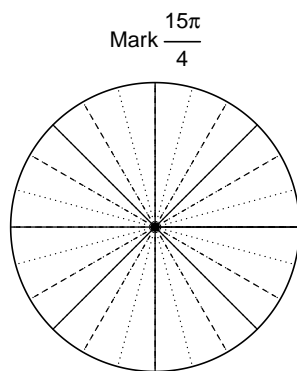
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 110 meters. The radius is 53 meters. What is the angle measure in radians?

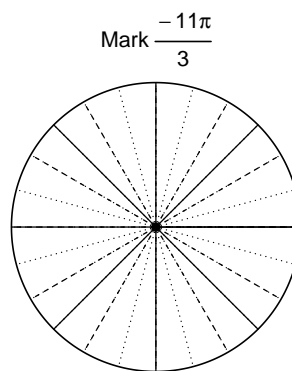


Question 2

Consider angles $\frac{15\pi}{4}$ and $\frac{-11\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{15\pi}{4}\right)$ and $\cos\left(\frac{-11\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\sin(15\pi/4)$



Find $\cos(-11\pi/3)$

Question 3

If $\sin(\theta) = \frac{-15}{17}$, and θ is in quadrant III, determine an exact value for $\tan(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 4.96 meters, a frequency of 8.27 Hz, and a midline at $y = -3.61$ meters. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).